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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/509,430

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Olaf Pichler

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3270

156

7590

12/04/2009

Kirschstein, Israel, Schiffmiller & Pieroni, P.C.

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EXAMINER

BELLO, AGUSTIN

ART UNIT

PAPER NUMBER

2613

NOTIFICATION DATE

DELIVERY MODE

12/04/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/509,430	<b>Applicant(s)</b> PICHLER ET AL.	
	<b>Examiner</b> Agustin Bello	<b>Art Unit</b> 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 23-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 23-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/18/09 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 23-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graves (U.S. Patent No. 7,212,739) in view of Sharratt (Patent No. US 7,136,586 B2).

Regarding claims 23, Graves teaches an optical cross-connect, comprising: a first plurality of input channels for through data traffic (reference numeral 22 in Figure 2); a second plurality of output channels for the through data traffic (reference numeral 28 in Figure 2); a plurality of first optical switching matrices (reference numeral 12a-12m in Figure 2) comprising a first group of input ports (i.e. reference numerals 24 in Figure 2 with the exception of inputs 32 on lines K from element 14 in Figure 2) which are connected to the input channels of the cross-connect, and a first group of output ports (i.e. reference numerals 26 in Figure 2 with the exception of outputs 30 on lines K to element 14 in Figure 2) which are connected to the output

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channels of the cross-connect, for interconnecting the input channels and the output channels; each of the first switching matrices being operative for switching optical communication signals at a same wavelength assigned to the first optical switching matrices (column 4 line 49 – column 5 line 17); the first optical switching matrices having a second group of output ports (i.e. outputs 30 on lines K to element 14 in Figure 2) and a second group of input ports (i.e. inputs 32 on lines K from element 14 in Figure 2); a group of one or more signal shaping units formed as wavelength converters (reference numeral 14 in Figure 2), each signal shaping unit having an input connected to the second group of output ports (i.e. via outputs 30 on lines K to element 14 in Figure 2) and an output connected to the second group of input ports (i.e. via inputs 32 on lines K from element 14 in Figure 2); each signal shaping unit being operative for regenerating the optical communication signal received at its input port to produce a regenerated optical signal (i.e. the input wavelengths are formed or produced anew at a particular wavelength and output); and switching elements (i.e. the internal switching mechanisms within switching matrices 12a-12m and 14 in Figure 2) for selectively connecting the output or the input of each of the signal shaping units to different ones of several of the second group of input ports or second group of output ports, respectively, of the first optical switching matrices. Graves differs from the claimed invention in that Graves fails to specifically teach that the disclosed signal shaping unit formed as wavelength converters are operative for converting an optical communication signal into an electrical signal, wherein the regenerated signal produced by said signal shaping units formed as wavelength converters has the same wavelength as before the regeneration. However, Sharratt teaches one or more signal shaping units (Figure 4) formed as wavelength converters that are operative for converting an optical communication signal into an electrical signal

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(reference numeral 858 in Figure 4), wherein the regenerated signal produced by said signal shaping units formed as wavelength converters has the same wavelength as before the regeneration (i.e. “to modulate a laser tuned to output radiation at the waveband associated with the chain” of column 14 lines 1-5). One skilled in the art would have been motivated to employ one or more signal shaping units formed as wavelength converters that are operative for converting an optical communication signal into an electrical signal, wherein the regenerated signal produced by said signal shaping units formed as wavelength converters has the same wavelength as before the regeneration in order to selectively provide purely optical amplification or regenerative amplification (column 13 lines 54-56 of Sharratt). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include a one or more signal shaping units as taught by Sharratt in the apparatus of Graves.

Regarding claim 24, Graves teaches the optical cross-connect of claim 23, in that each signal shaping unit is operative for shaping a communication signal (inherent in the wavelength converting switch 14 of Figure 2), but differs from the claimed invention in that Graves fails to specifically teach that the shaping occurs for only one communication signal. However, Sharratt teaches that this concept is well known in the art (Figure 4). One skilled in the art would have been motivated to shape only one communication signal via each individual shaping unit in order to regenerate individual components of a WDM signal (column 13 lines 35-57 of Sharratt). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to shape only one communication signal.

Regarding claim 25, Graves teaches the optical cross-connect of claim 23, and at least one second optical switching matrix (reference numeral 62 in Figure 3) for selectively

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connecting the second group of output ports of the first optical switching matrices to one of the wavelength converters.

Regarding claim 26, Graves teaches the optical cross-connect of claim 25, and at least a third optical switching matrix (reference numeral 60 in Figure 3) for selectively connecting the wavelength converters to one of the second group of input ports of the first optical switching matrices.

Regarding claim 27, Graves teaches the optical cross-connect of claim 23, in that each input channel is connected to the first optical switching matrices via a wavelength demultiplexer (reference numeral 16a-16n in Figure 2) and/or the first optical switching matrices are connected to each output channel via a wavelength multiplexer.

Regarding claim 28, Graves teaches the optical cross-connect of claim 23, and comprising inputs and/or outputs (reference numeral 30, 32 in Figure 2) connected to the second group of input or output ports of the first optical switching matrices, for branching the through data traffic.

Regarding claim 29, the combination of Graves and Sharratt differs from the claimed invention in that it fails to specifically teach that each wavelength converter has a wavelength-tunable transmitter part. However, the use of wavelength tunable transmitter parts in wavelength converters is well known in the art and Official Notice is given to that effect. One skilled in the art would have been motivated to employ tunable transmitter parts in the wavelength converters of Graves in order to allow for conversion of any input wavelength to any output wavelength. Furthermore, Sharratt's Figure 4 suggests as much via disclosure of a variable laser. Therefore, it

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would have been obvious to one skilled in the art at the time the invention was made to include tunable transmitter parts in the wavelength converters of Graves.

Regarding claim 30, Graves teaches the optical cross-connect of claim 23, in that the first group of input ports (reference numeral 22 in Figure 2) are connected to the input channels (reference numeral 24 in Figure 2) and/or the first group of output ports are connected to the output channels, respectively, without a switching matrix being inserted in between.

Regarding claim 31, Graves differs from the claimed invention in that Graves fails to specifically teach that each signal shaping unit comprises a photodiode for optical-to-electrical conversion, an electrical circuit connected thereto for impulse shaping and amplification, and a fixed wavelength laser diode driven by an electrical signal of said electrical circuit for regenerating the optical communication signal. However, Sharratt teaches that such signal shaping units are well known in the art (Figure 4). One skilled in the art would have been motivated to employ this type of signal shaping unit as the signal shaping unit in Graves in order to allow selection of simply pure optical amplification or regenerative amplification (column 13 lines 35-57 of Sharratt). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to employ a signal shaping unit such as that taught by Sharratt in the apparatus of Graves.

### ***Response to Arguments***

4. Applicant's arguments filed 09/18/09 have been fully considered but they are not persuasive.

Applicant argues that the newly amended claim language distinguishes the claimed invention from the cited prior art. However, the examiner disagrees. As noted in the amended

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office action, the previously cited prior art continues to read on the claimed invention. Although applicant contends that nothing in Graves teaches that the wavelength converting switch can regenerate optical signals, the examiner notes that input optical signals in Graves are regenerated at least in the sense that they are formed or produced anew. Furthermore, applicant's requirement that regeneration of an optical signal is limited to the same wavelength at the input and the output of the regenerating device is overly restrictive since regeneration can occur in a variety of manners including regeneration of a signal at a different wavelength. Regardless, and as noted in the amended office action, Sharratt teaches that regeneration at the same wavelength is well known in the art. Therefore, when given the broadest reasonable interpretation, the combination of Graves and Sharratt continues to meet the limitations of the claimed invention.

### ***Conclusion***

5. This is a continuation of applicant's earlier Application No. 10/509,430. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (571) 272-3026. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571)272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Primary Examiner  
Art Unit 2613